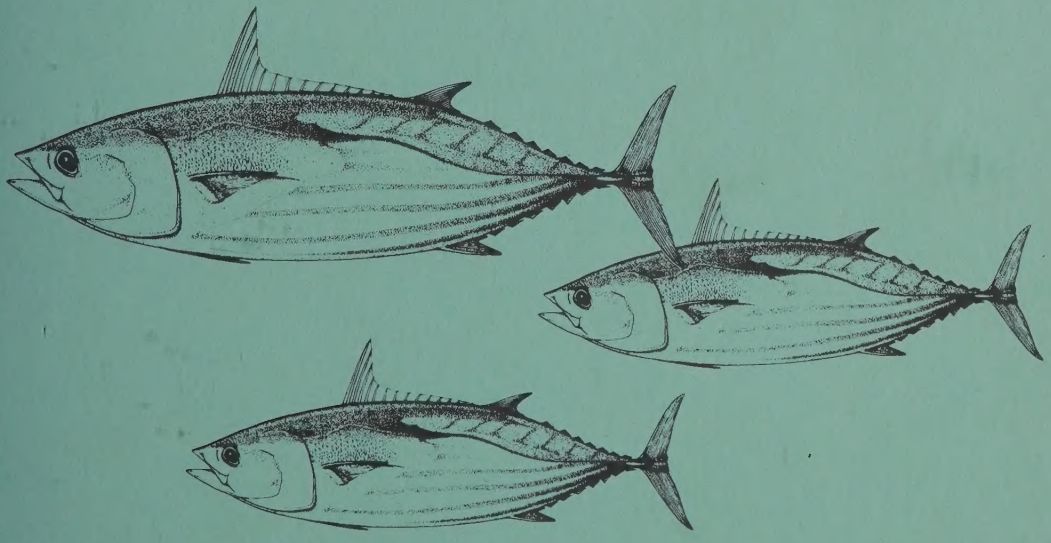
NOVEMBER 1979
No. 11

# FISHING INFORMATION

## Southwest Fisheries Center-La Jolla, California



noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / NATIONAL MARINE FISHERIES SERVICE

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES CENTER
8604 LA JOLLA SHORES DRIVE - P. O. BOX 271
LA JOLLA, CALIFORNIA 92037

# FISHING INFORMATION

NOVEMBER 1979, No.11

EDITOR: JAMES A. RENNER

I. Barrett, Director, SOUTHWEST FISHERIES CENTER
J. Carr, Deputy Director

# PREFACE

This publication, Fishing Information, appears monthly and contains 1) fishery advisory information, 2) a narrative description of pertinent surface temperature conditions, 3) charts of winds and pressures for the eastern North Pacific, 4) charts of sea surface temperature for the North Pacific and eastern tropical Pacific, and 5) charts of subsurface temperature structure in the eastern North Pacific.

A supplement to Fishing Information appears at 15-day intervals throughout the year. It contains a chart of sea surface temperature (contoured at $2^{o}F$ ($1^{o}C$) intervals) from Baja California to Vancouver Island out to about $135^{o}W$. Special bulletins are published in conjunction with the 15-day sea surface temperature charts which include short-term projections of albacore distribution and locations of productive fishing areas, information on oceanographic and atmospheric conditions, and other information as is appropriate during the albacore fishing season.

To cancel delivery of this publication in the event you no longer need to receive it, or to change the delivery address if you are moving but still need to receive it, please notify us by writing: James A. Renner, Editor, Fishing Information, National Marine Fisheries Service, Southwest Fisheries Center, P. O. Box 271, La Jolla, California 92038.

Submitted for publication - December 31, 1979

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ENVIRONMENTAL CHARTS ANALYZED BY:

F. Miller (Figures 8 and 9)
J. Renner (Figures 1, 2, 3, 4, 5, 6, 7, and 15-day Supplement)

TECHNICAL EDITOR:
R. Allen

CARTOGRAPHY:
R. Allen, H. Orr

# Acknowledgements

The following organizations and stations contributed data for November 1979 charts:

Inter-American Tropical Tuna Commission, La Jolla, California
Kelco Company, San Diego, California
National Oceanic and Atmospheric Administration
  National Marine Fisheries Service, La Jolla, California; Honolulu, HI
  National Weather Service, San Diego, California and Washington D.C.
  National Ocean Survey, Pacific Marine Center, Seattle, Washington

Fisheries Research Board of Canada, Pacific Environment Institute, West Vancouver, British Columbia by L. F. Giovando from observations by:
  J. Redhead at Langara Island Light;
  C. T. Hilliar at Cape St. James Light;
  R. W. Moe at Kains Island Light;
  M. V. Stewart at Amphitrite Point Light

Scripps Institution of Oceanography, La Jolla, California

# Sea Surface Temperature and Environmental Conditions

Forrest R. Miller

## Eastern North Pacific

During November sea surface temperatures (SST) normally decrease over the north Pacific. The Aleutian low is normally centered near 57°N, 145°W and the subtropical high near 30°N, 140°W (Figure 1). Between the Aleutian low and the subtropical high pressure centers, surface winds are strongest and ocean wind mixing is most intense. Along the southern boundary of the north Pacific Ocean front (35°N to 45°N) weather systems intensify and move eastward toward the west coast of North America.

During November 1979 the Aleutian low was located near 55°N, 167°W. The Pacific high pressure system was split into two centers. The eastern center was near 30°N, 127°W with a ridge line extending northeast to a large high pressure center that prevailed over the northwestern states most of the month (Figure 2). In the west Central Pacific, the other high pressure center was located near 35°N, 170°E. A low pressure trough extended southward from the Aleutian low to 20°N between 130°W and 155°W.

The SST pattern (Figure 3) was typical for November except for large areas of negative and positive SST departures more than 1°C. North of 35°N and west of 145°W, the north Pacific Ocean front was not sharply defined. SST's were as much as 1°C below normal over a broad zone of extensive wind mixing and storm activity between the Aleutian low and the Central Pacific high pressure center. The ocean area covered by negative SST departures greater than 1°C (Figure 5) was significantly reduced from October to November. During October 1979 a large area with SST's more than 2°C below normal developed west of 150°W from 35°N to 45°N. The large area of negative departures decreased in size during November due, in part, to the splitting of the subtropical high pressure system and the development of a low pressure trough between 130°W and 155°W. This event broke down the usually strong westerly surface winds north of 35°N (Figure 1), and created a wind circulation of normal strength but more variable in direction (Figure 2). East of 145°W and from 20°N to 35°N, the influence of a weak but persistent high pressure center maintained a large area with SST's 1 to 2°C above normal (Figure 5). The prevailing high pressure ridge and higher surface winds along the U.S. west coast north of 35°N maintained SST's more than 1°C above normal. However, between 125°W and 135°W the size of the area covered by SST's more than 1°C above normal was significantly decreased since October 1979. Frequent storm passages across the U.S. west coast north of 35°N and associated ocean wind mixing helped to cool SST's at a greater than normal rate. SST's have been below normal along the coast of southern California and Baja California from 35°N to 25°N since August 1979. A comparison of SST's from November 1978 to this November reveals that along the west coast and out to 130°W it was 1 to 2°C warmer in November 1979 (Figure 7). Over the north Central Pacific SST's were 1 to 2°C colder in November 1979 than in November 1978. Similar patterns and locations of positive and negative SST differences from a year ago also occurred in October.

## Western North Pacific

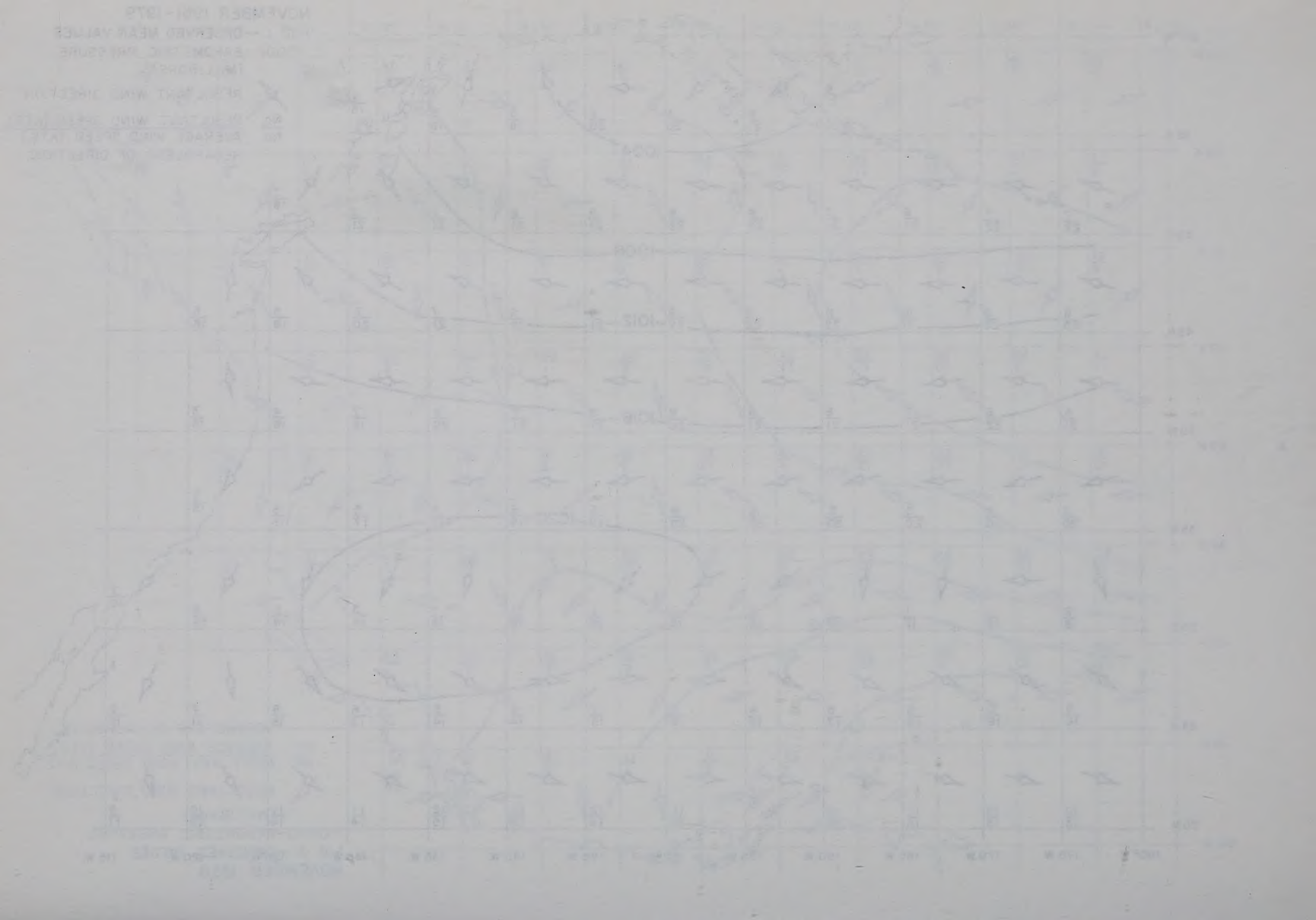
During November the subtropical high pressure system dominated the surface wind pattern from 20°N to 45°N, and the Aleutian low system extended westward from its center over Alaska to Kamchatka. The westerly wind circulation and ocean mixing was strongest from 45°N to 50°N between 175°E and northern Japan. In this region the north Pacific Ocean front was better defined (by close packing of SST contours) than in the eastern Pacific.

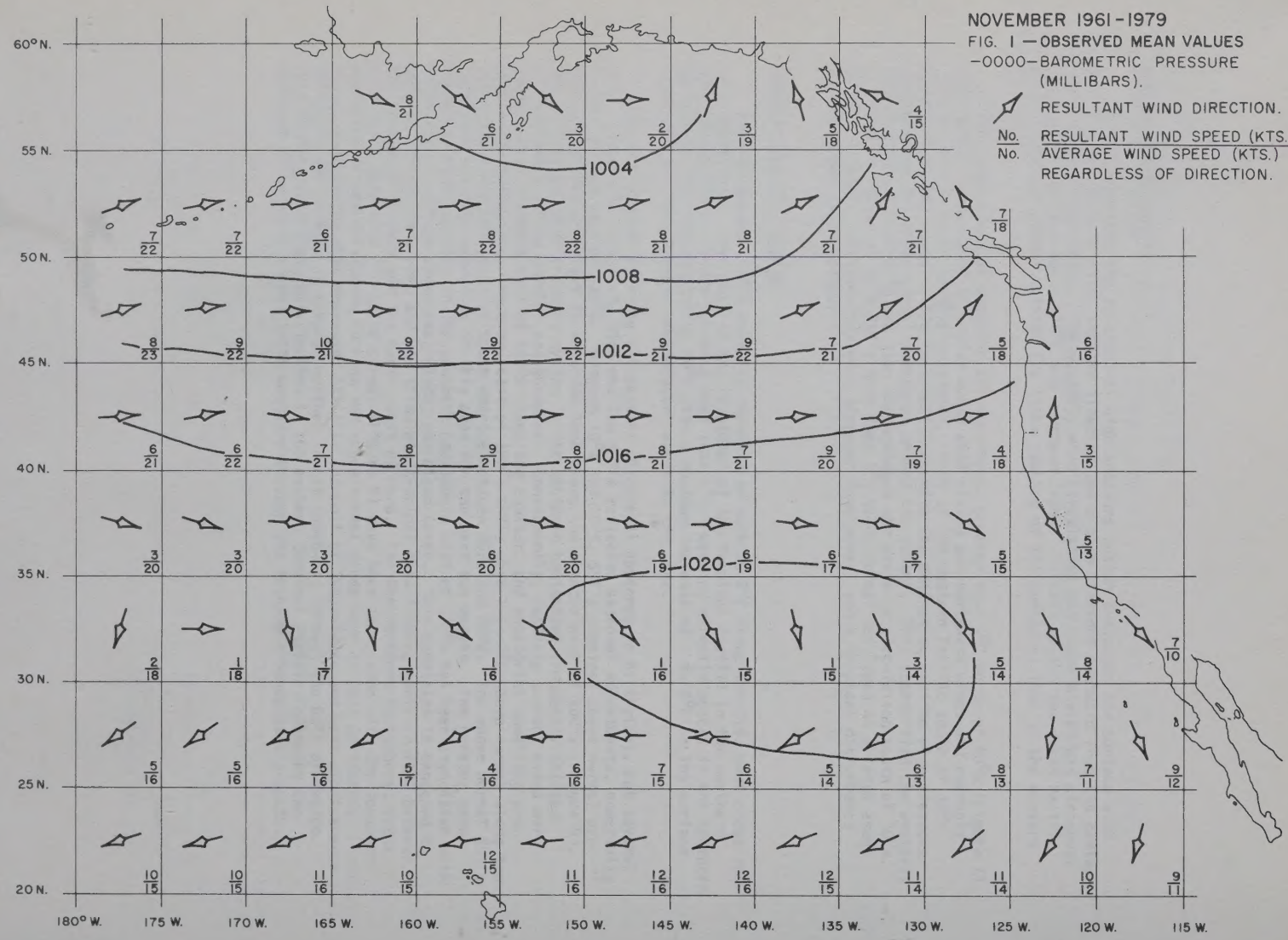
The large areas of negative SST departures greater than 1°C north of 40°N (Figure 7) were marked evidence of extensive ocean wind mixing and northwest winds and currents associated with rapid developing storms. Most of the western Pacific south of 35°N experienced near normal SST's in association with the dominating Pacific high pressure system which had above normal pressures around its center. This intensified the westerly circulation north of 40°N and also strengthened the easterly circulation south of 30°N. As a result, south of 30°N SST's more than 1°C below normal developed in a large area (Figure 7) where surface winds were stronger than normal and a tropical disturbance developed and moved westward.

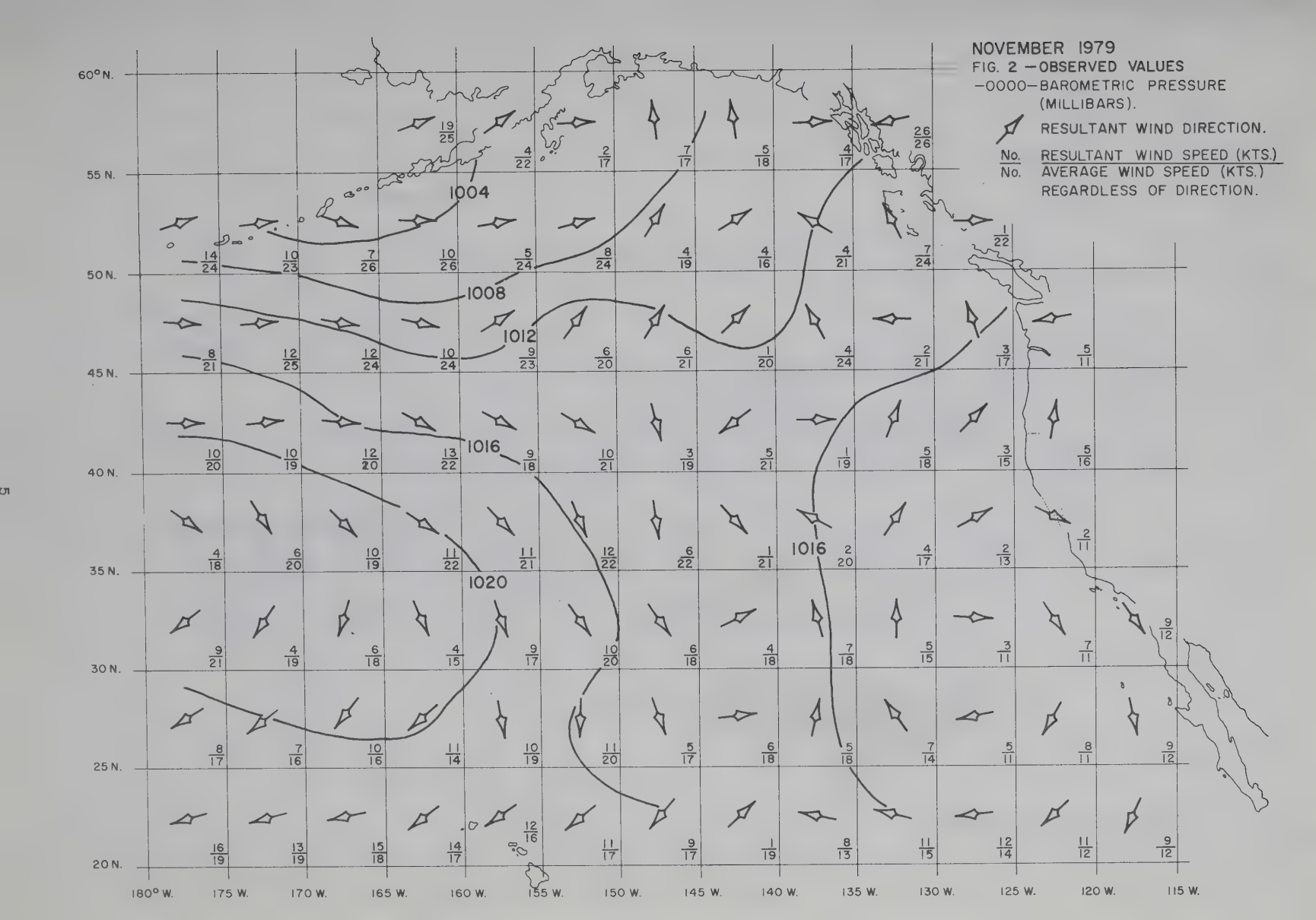
## Eastern Tropical Pacific

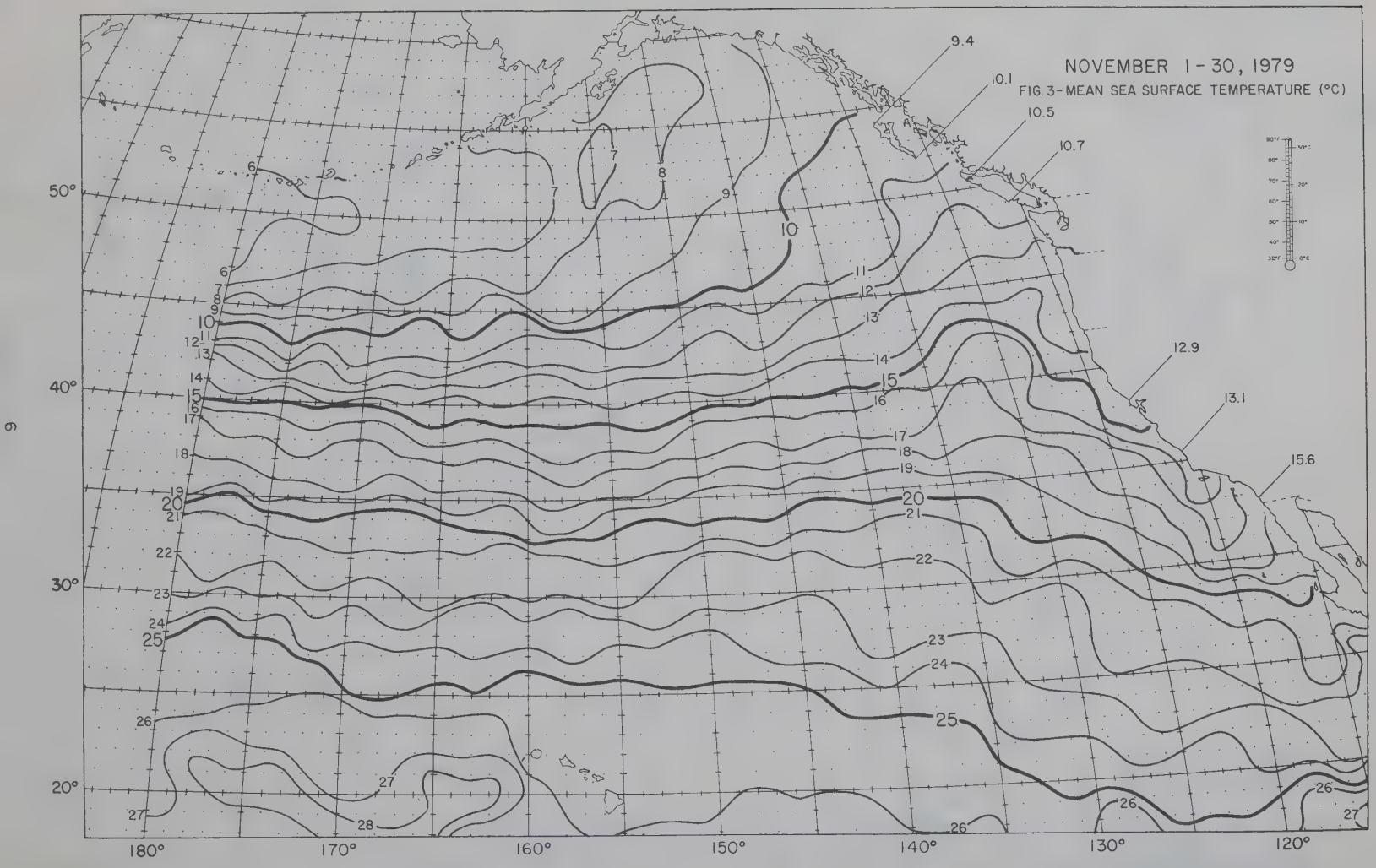
During November SST's normally decrease as much as 2°C along the U.S. west coast and Baja California. Over most of the remainder of the tropical Pacific in the northern hemisphere, SST's usually decrease less than 1°C. Warming normally occurs in the southern hemisphere from the equator to 25°S with a maximum increase of 1 to 2°C in the surface layers of the Peru Current and adjacent areas to the west.

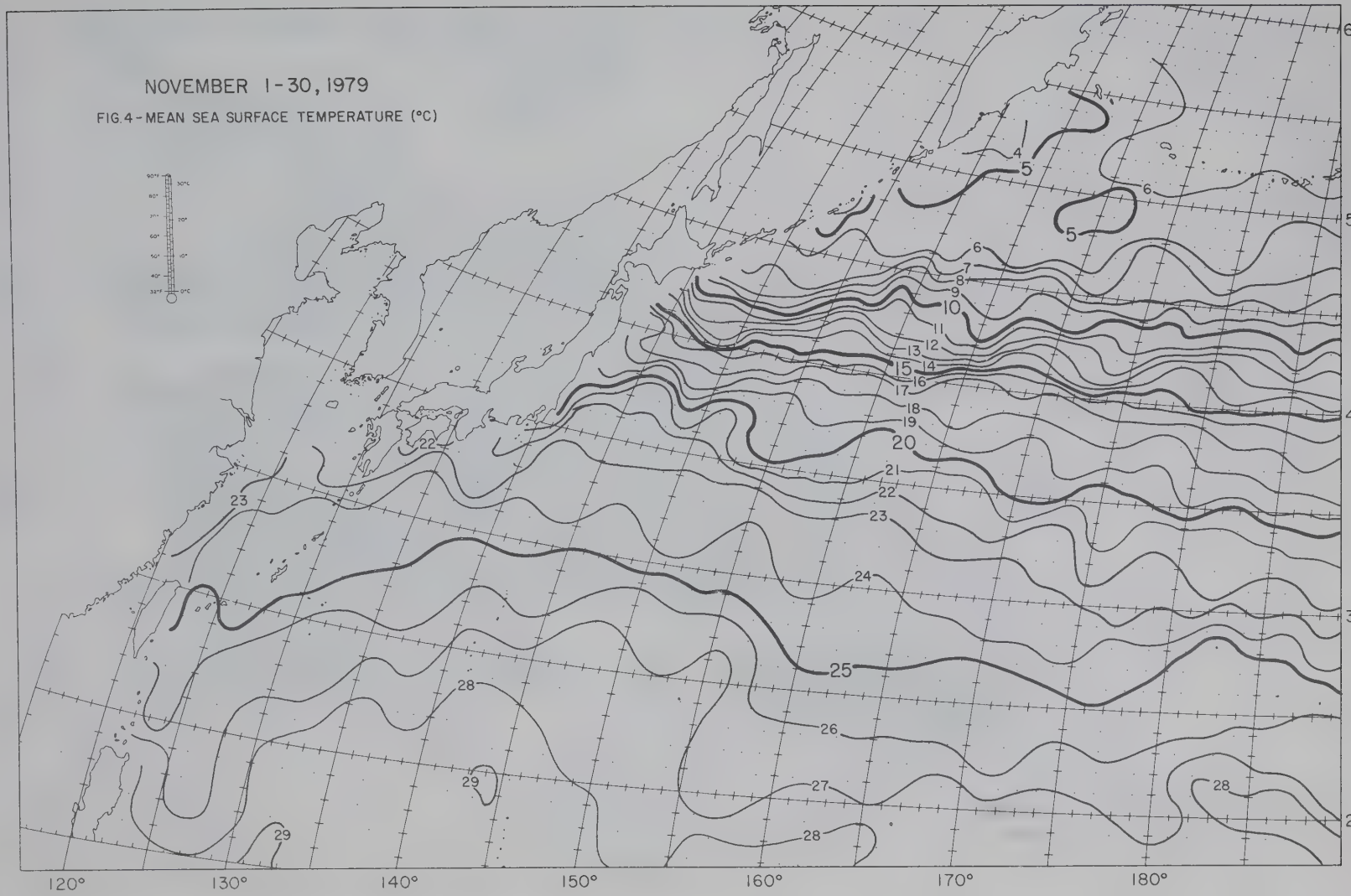
During November 1979 the SST pattern (Figure 8) appeared to be typical, but several small centers of relatively high and low SST's reflected seasonal adjustments, especially in the tropics east of 120°W. Between 10°N and 10°S, SST's remained above normal over most of the region except in a narrow band along the equator west of 100°W (Figure 9). The subtropical high pressure system in the southern hemisphere frequently shifted northwestward during October and November. Consequently, easterly surface winds were above normal strength west of 120°W along the equator, and equatorial upwelling was apparently maintained. However, east of 100°W SST's were 1 to 2°C above normal along the equator and off the coast of South America between 80°W and 88°W. The above normal SST's have been steadily expanding in this area for the past two months. The greater than normal seasonal warming in the southern hemisphere east of 130°W has been associated with below normal surface pressures, winds, and cloud cover. This condition is expected to persist through December, and may stimulate tropical tuna fishing early in 1980 between the Galapagos Islands and the north coast of Peru. In the northern hemisphere, areas with SST's more than 1°C below normal (Figure 9) have been associated with the southward extension of the California Current and above normal winds west of Baja California. Above normal wind mixing also decreased SST's in the Gulf of Tehuantepec and west of Nicaragua following the passage of several weather fronts southward through the Gulf of Mexico. Tuna fishing conditions deteriorated in the eastern tropical Pacific following the movement of tropical storm JIMENA westward through the fishing grounds at mid-month.

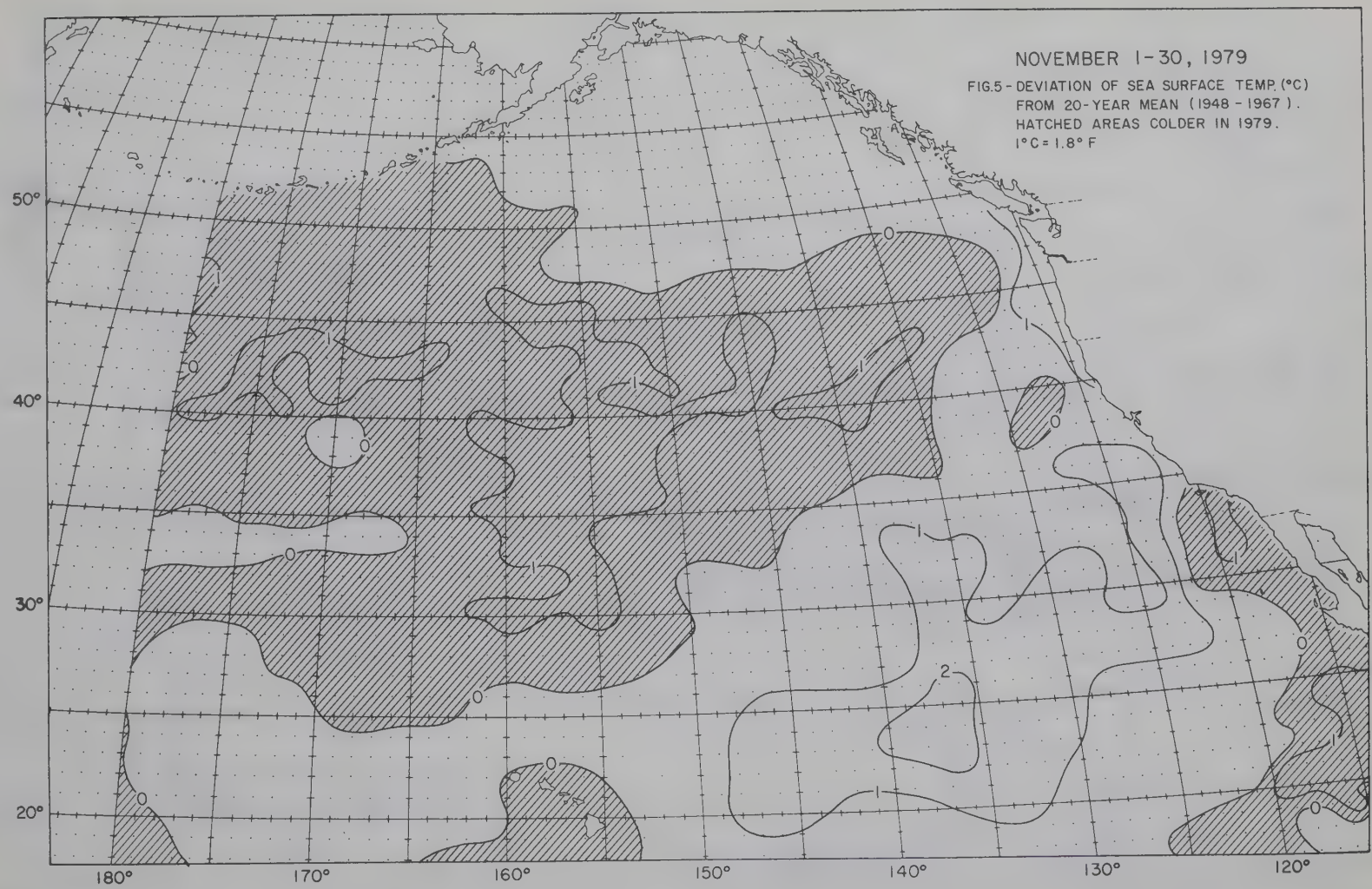


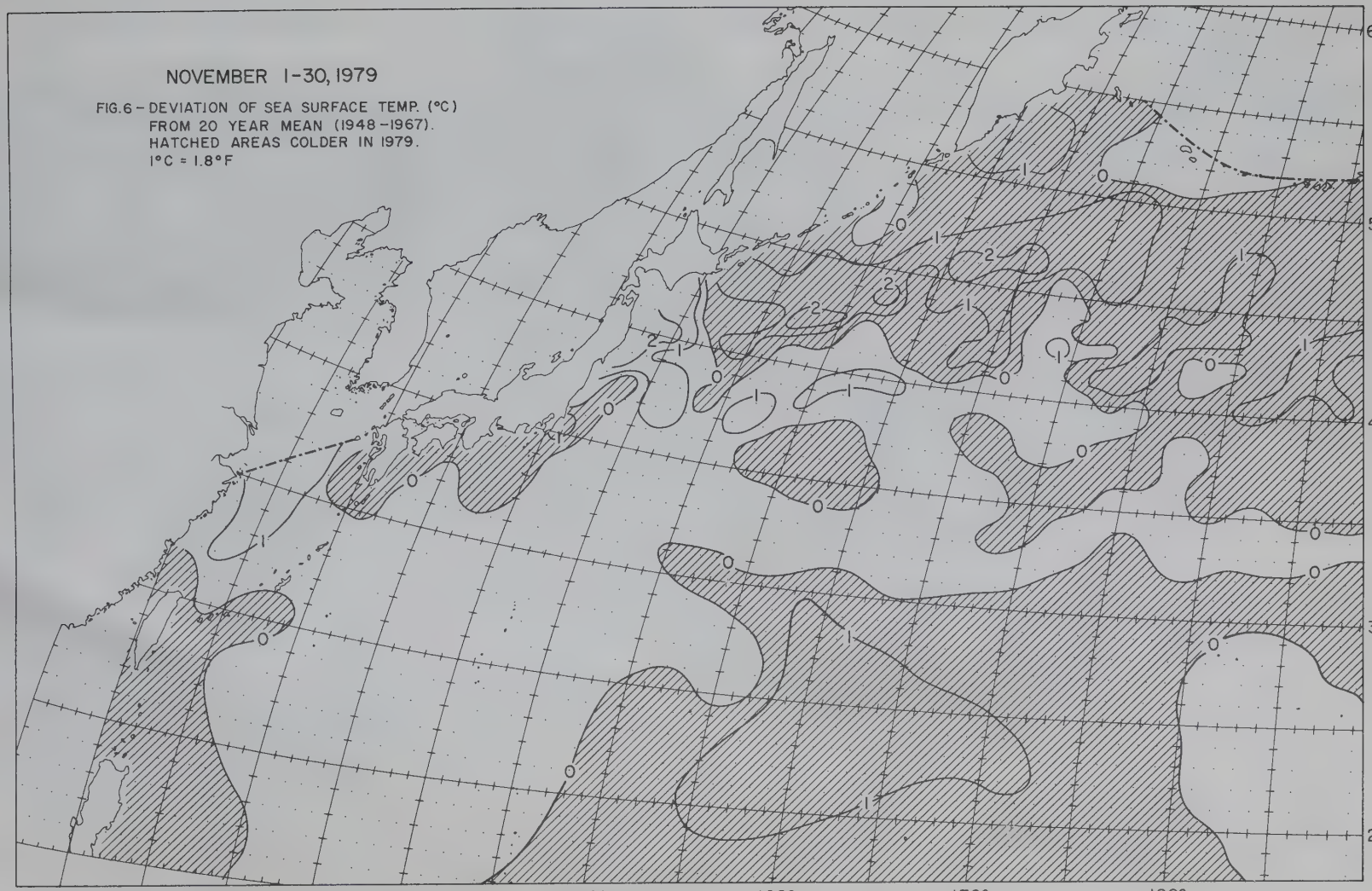

NOVEMBER 1961-1979
FIG. 1 — OBSERVED MEAN VALUES
-0000- BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.)
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1004
1008
1012
1016
1020
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

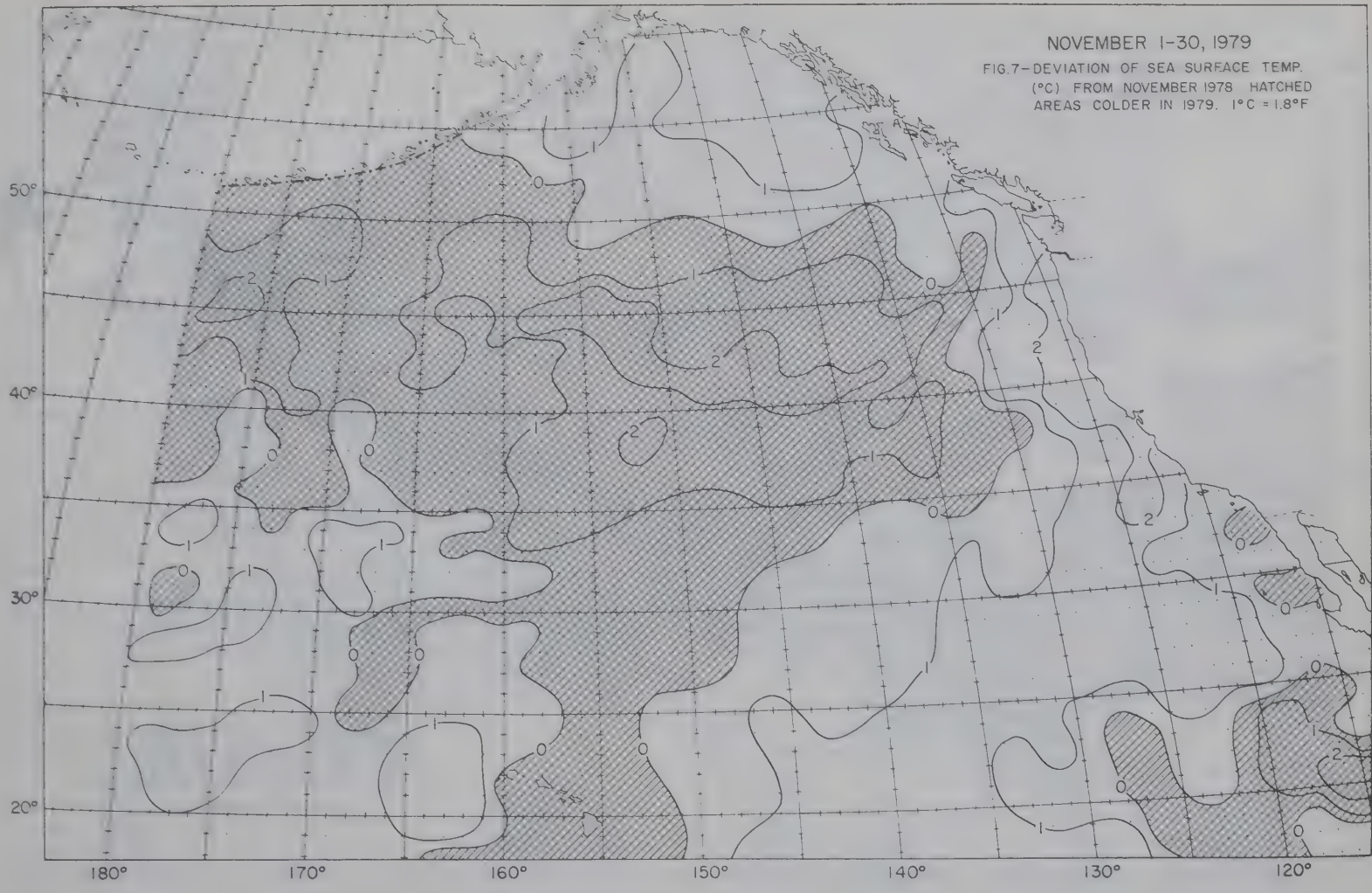

NOVEMBER 1979
FIG. 2 — OBSERVED VALUES
—0000— BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.)
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1004
1008
1012
1016
1016
1020
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

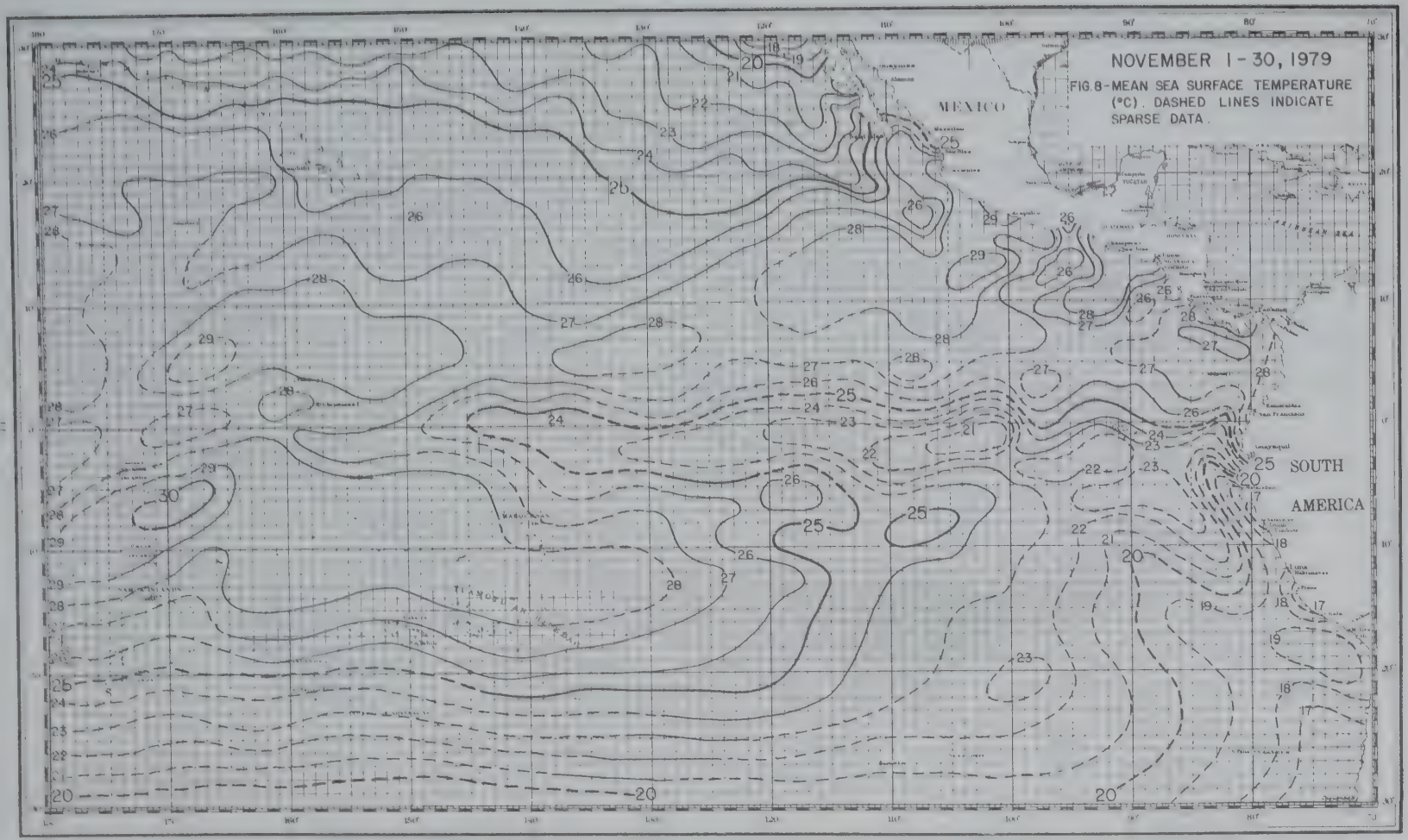

NOVEMBER 1 - 30, 1979
FIG. 3 - MEAN SEA SURFACE TEMPERATURE (°C)
9.4
10.1
10.5
10.7
12.9
13.1
15.6
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°

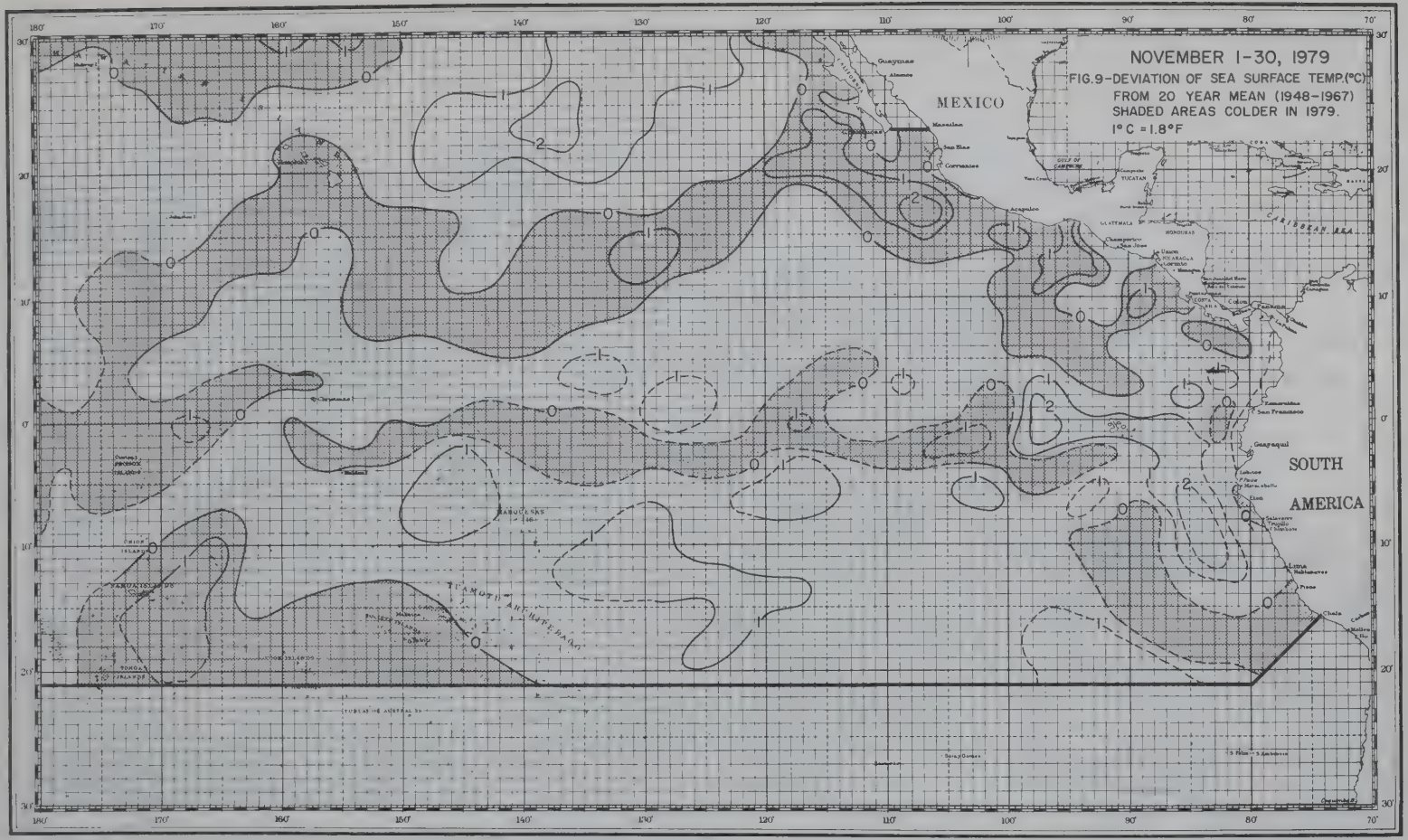

NOVEMBER 1-30, 1979
FIG.4-MEAN SEA SURFACE TEMPERATURE (°C)
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°


NOVEMBER 1-30, 1979
FIG.5 - DEVIATION OF SEA SURFACE TEMP. (°C) FROM 20-YEAR MEAN (1948 - 1967). HATCHED AREAS COLDER IN 1979. 1°C = 1.8° F
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°

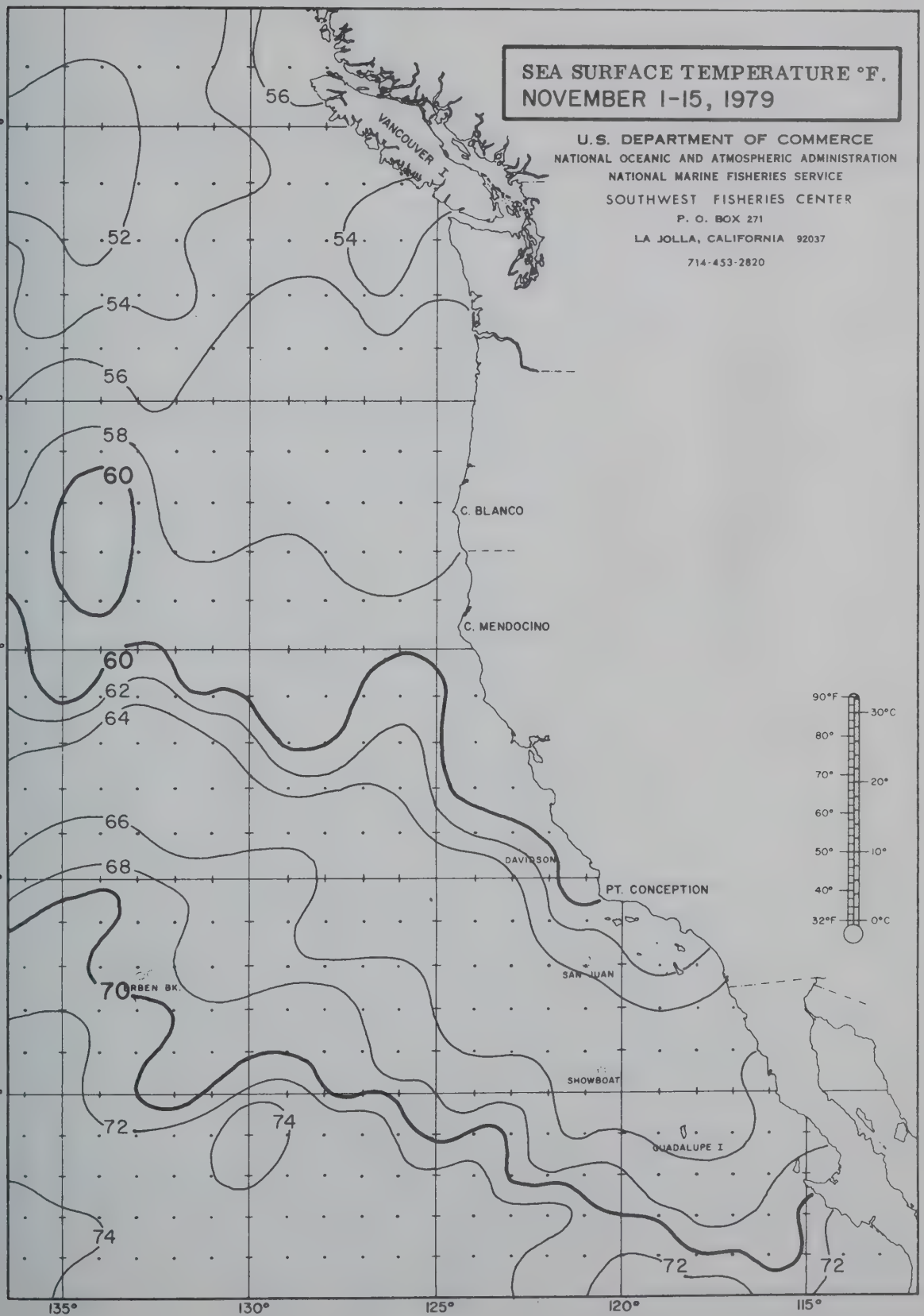

NOVEMBER 1-30, 1979
FIG.6 - DEVIATION OF SEA SURFACE TEMP. (°C)
FROM 20 YEAR MEAN (1948-1967).
HATCHED AREAS COLDER IN 1979.
1°C = 1.8°F
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°


NOVEMBER 1-30, 1979
FIG.7-DEVIATION OF SEA SURFACE TEMP. (°C) FROM NOVEMBER 1978 HATCHED AREAS COLDER IN 1979. 1°C = 1.8°F
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°

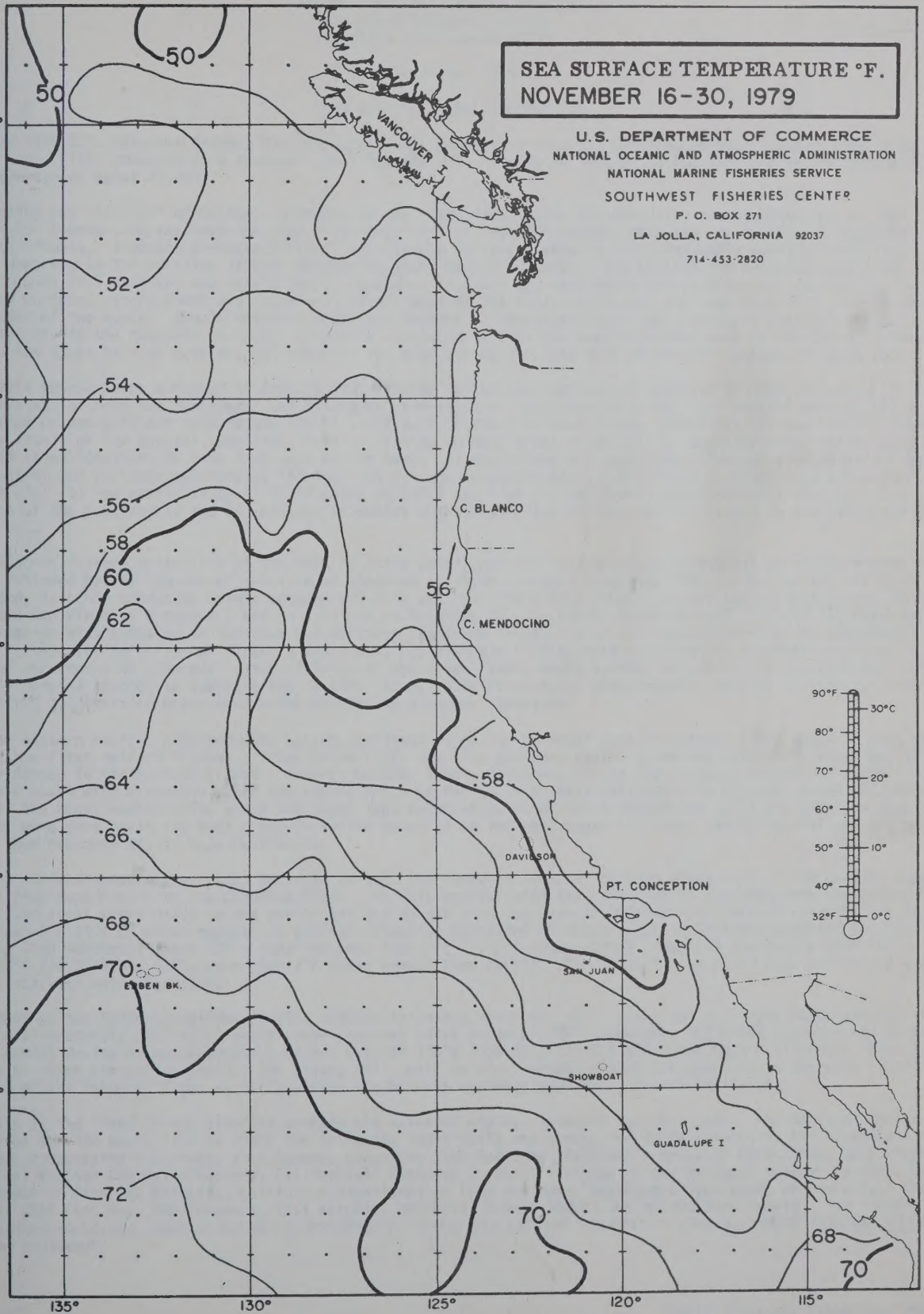

NOVEMBER 1 - 30, 1979
FIG. 8 - MEAN SEA SURFACE TEMPERATURE (°C). DASHED LINES INDICATE SPARSE DATA.
MEXICO
SOUTH AMERICA

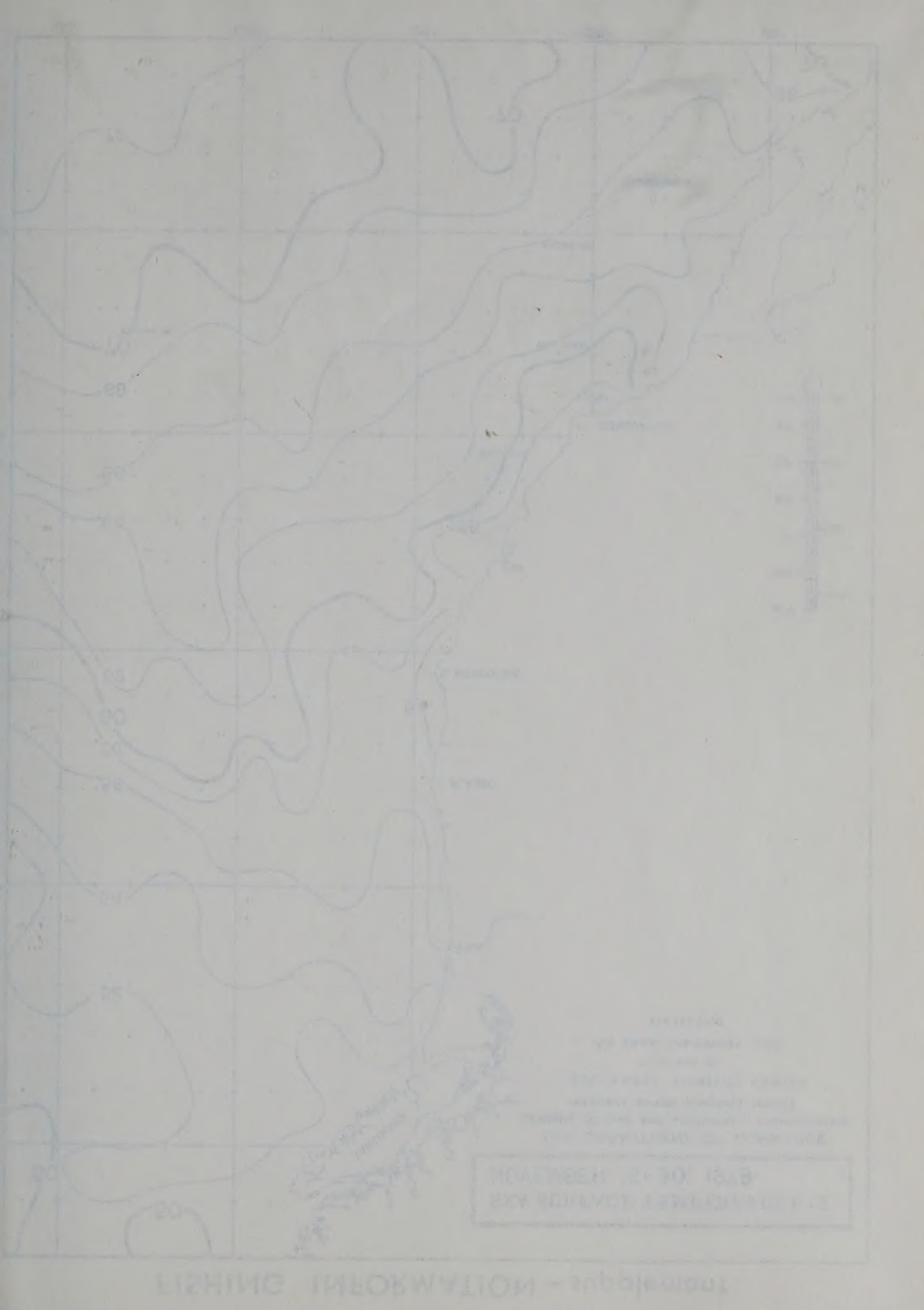

NOVEMBER 1-30, 1979
FIG.9-DEVIATION OF SEA SURFACE TEMP.(°C)
FROM 20 YEAR MEAN (1948-1967)
SHADED AREAS COLDER IN 1979.
1° C = 1.8°F
MEXICO
SOUTH
AMERICA
CARIBBEAN SEA
GUATEMALA
HONDURAS
NICARAGUA
COSTA
PANAMA
COLOMBIA
ECUADOR
PERU
CHILE
GALAPAGOS IS.
REVILLAGIGEDO IS.
CLIPPERTON I.
MARQUESAS IS.
TUAMOTU ARCHIPELAGO
TUBUAI IS.
AUSTRAL IS.
TONGA
FIJI IS.
Guaymas
Mazatlan
San Blas
Acapulco
Tehuantepec
Panama
Guayaquil
Callao
Lima
Pisco
Iquique
Arica
Chala
Salaverry
Trujillo
Chimbote
Paita
Manta
San Francisco
Tumaco
Buenaventura
Malpelo
Cocos I.
Easter I.
Juan Fernandez Is.
Valparaiso
Talcahuano
Concepcion
Corral
Puerto Montt
Chiloe I.
Mollendo
Ilo
Tocopilla
Antofagasta
Caldera
Coquimbo
Valdivia
Osorno
Puerto Aysen
Puerto Natales
Strait of Magellan
Tierra del Fuego
Falkland Is.
Rio de Janeiro
Santos
Montevideo
Buenos Aires
Bahia Blanca
Comodoro Rivadavia
Puerto Deseado
Puerto San Julian
Rio Gallegos
Cape Horn
Cape Virgins
Cape Pillar
Cape Froward
Cape Tres Montes
Cape Blanco
Cape Corrientes
Cape San Lucas
Cape Gracias a Dios
Cape Catoche
Cape Sable
Cape Hatteras
Cape Fear
Cape Lookout
Cape Romain
Cape Canaveral
Cape Florida
Cape Sable
Cape Cod
Cape Race
Cape Farewell
Cape Chidley
Cape Charles
Cape Henry

# FISHING INFORMATION – supplement



# FISHING INFORMATION – supplement





U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center
La Jolla, California 92038

Bulletin No. 79-9

# 1979 U.S. ALBACORE LANDINGS LOW

The 1979 U.S. albacore fishery has been one of the poorest on record. Landings through October total about 0 tons. This compares to a seasonal total for the U.S. fishery in 1978 of 18,500 tons and to the seasonal 10- average of about 23,000.

During the last half of October, albacore catches were made in the offshore area between Monterey and San cisco; however, as has been the case throughout most of the 1979 season, poor weather conditions hampered ing efforts. Jigboats averaged 20-50 fish a day and baitboats about a ton a day while working 30-50 miles off- e Monterey to the Farallon Islands during the third week of October. The size of the albacore caught averaged 5 pounds (9.1-11.4 kg) and only a few 7-8 pounders (3.2-3.6 kg) were among the fish landed. During the last in October, strong winds and rough seas forced most of the boats in to port and many stayed in port for the inder of the month. Should weather conditions improve, a number of commercial fishermen plan to resume fishing albacore in the Monterey vicinity. Jigboats continued to fish the area 360 miles west of the Columbia River ng the first half of October, but departed the area during the last half of October because of rough seas.

There appear to be a number of factors contributing to the low landings of albacore in 1979 including (1) the arrival of both the "northern" and "southern" substocks of fish into North American coastal waters; (2) gener- weak or non-existent temperature fronts along much of the U.S. West Coast, especially off the Pacific Northwest, he result of low coastal upwelling, causing fishing in many areas to be spotty, scattered and lasting only a few in given locations because fish were on the move; (3) high winds and rough seas hampered fishing effort notably central and northern California; (4) fish not biting, in particular in the Cortez Bank area and off central fornia; (5) low availability of 12-15 pound (5.5-6.8 kg) fish off California which normally make up a significant ion of the U.S. catch; and (6) closure of waters within 200 miles of the coast of Canada to U.S. albacore fisher-

Albacore fishery scientists at the NMFS La Jolla Laboratory are conducting an investigation of the migration e followed by the "southern" substock of albacore on their seasonal departure from coastal waters off California. study is being conducted mainly between 30°-35°N and 135°-145°W from aboard the R/V David Starr Jordan which rted San Diego on November 1 and will return on November 30. Research operations will include (1) oceanographic urements with emphasis on locating and defining the ocean frontal structure associated with the Subtropic Front h is believed to influence albacore migration; (2) albacore fishing with experimental vertical longlines to test the occurrence of albacore in the vicinity of the ocean fronts where surface waters may be too warm for trolling; (3) special studies to evaluate the feasibility of using ocean color measurements, made by a recently launched llite, to determine ocean conditions related to albacore migration.

The eastern Pacific high pressure system continued to be the dominant weather pattern along the U.S. west coast ng the first half of October. After October 18, the high pressure system moved westward and a deep low pressure er formed in the Gulf of Alaska. Several weather fronts developed in the low pressure system and moved across west coast with extensive rains and strong winds as far south as Baja California on October 19 and 20. However, of the heavy weather, high winds and rough seas remained north of Point Conception until the last few days of ber when once again the high pressure system moved in on the west coast with very strong coastal and offshore s from Monterey Bay to Baja California.

Sea surface temperatures (SST) began to reflect the expected seasonal cooling along most of the coastal areas, pt from Cape Blanco to the Columbia River. In this coastal area the influence of the high pressure system and ciated light winds early in the period and during the last few days of October were factors contributing to SST's than 2°F (1.1°C) above normal. A similar situation prevailed offshore south of 40°N and westward from Davidson San Juan Seamounts where SST's remained more than 2°F (1.1°C) above normal. Most of the region with SST's greater 62°F (16.7°C) had SST's more than 2°F above normal (see chart). The coastal area along Baja California was the place with below-normal SST's.

Based on the National Weather Service outlook for early November, SST's along the U.S. west coast and out to W will gradually cool at slightly above seasonal rates north of 40°N. However, SST's are not expected to be w normal during November anywhere except west of 130°W from 42°N to 50°N and along Baja California. From Cape co to Point Conception and out 100 miles, SST's will be near normal. SST's are expected to decrease significant- est of the Columbia River as early winter storms move southeastward into central California.

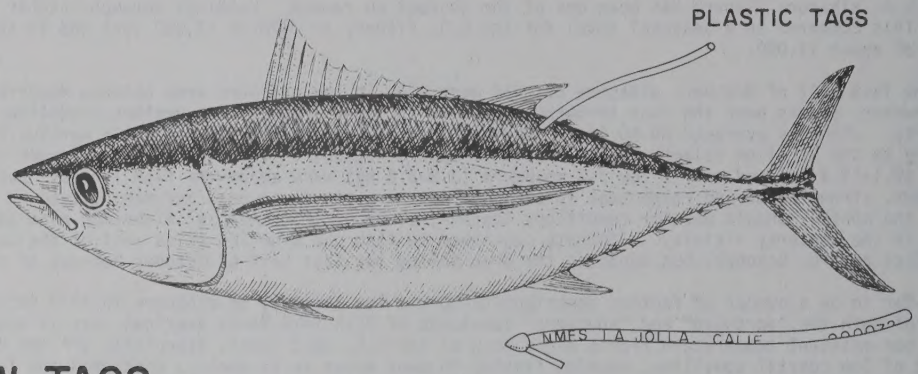
This is the final 15-day albacore summary and extended weather forecast for this year. The National Marine eries Service would like to thank the following individuals and groups for their support in the albacore advisory ram: cooperating fishermen, fish buyers, canneries, the American Fishermen's Research Foundation, Navy Fleet rical Weather Central (Monterey, California), Extended Forecast Division of the National Weather Service, Oregon rtment of Fish and Wildlife, California Department of Fish and Game, Washington Department of Fisheries, KRED ka, KBBR Coos Bay, KNPT Newport, KAST Astoria, NMC Point Reyes, WWD La Jolla, and many others. Any comments or estions which may improve our daily broadcasts, 15-day sea surface temperature charts, and/or Fish Bulletins be welcomed.

Staff, Albacore Fisheries Program
R. Michael Laurs, Leader

mber 5, 1979

# $ REWARD $

## FOR ALBACORE TUNA TAGS




## YELLOW TAGS

THE NATIONAL MARINE FISHERIES SERVICE WILL PAY $ 2.00 FOR EACH YELLOW TAG RECOVERED. (NO NEED TO RETURN FISH)

**RECORD:**

- ▶ WHERE
- ▶ WHEN
- ▶ HOW

} *FISH WAS CAUGHT*

- ▶ LENGTH OF FISH (TIP OF LOWER JAW TO FORK OF TAIL)

FORWARD TO NMFS ADDRESS ON TAG

## RED TAGS

THE NATIONAL MARINE FISHERIES SERVICE WILL PAY $ 50.00 FOR EACH RED TAG & FISH RETURNED. (FISH WITH TAG INTACT MUST BE RETURNED

**RECORD:**

- ▶ WHERE
- ▶ WHEN
- ▶ HOW

} *FISH WAS CAUGHT*

- ▶ LENGTH OF FISH (TIP OF LOWER JAW TO FORK OF TAIL)

NOTIFY NMFS P.O. BOX 271, LA JOLLA, CA. TEL. (714) 453-2820

THE AMERICAN FISHERMEN'S RESEARCH FOUNDATION WILL AWARD CASH PRIZES FOR YELLOW & RED TAG NUMBERS DRAWN IN AN ANNUAL LOTTERY.